

WHAT IS CLAIMED IS:

- 1                   1.     A method of treating an aneurysm, comprising the steps of:  
2                   providing a device having a cover and a lateral extension, the cover and  
3 extension being movable from a collapsed position to an expanded position;  
4                   advancing the device through a patient's vascular system to an aneurysm with  
5 the cover in the collapsed position;  
6                   moving the lateral extension into the neck of the aneurysm and the cover over  
7 the neck of the aneurysm to isolate the aneurysm from the parental vessel.
- 1                   2.     The method of claim 1, wherein:  
2                   the providing step is carried out with the cover being a substantially flat  
3 element; and  
4                   the moving step is carried out with the cover being positioned against a wall of  
5 the parental vessel around the neck of the aneurysm.
- 1                   3.     The method of claim 1, wherein:  
2                   the moving step is carried out with the lateral extension extending laterally  
3 outward from a side of the device.
- 1                   4.     The method of claim 1, wherein:  
2                   the providing step is carried out with the lateral extension forming at least one  
3 loop extending into the aneurysm.
- 1                   5.     The method of claim 1, wherein:  
2                   the providing step is carried out with the lateral extension forming 1-8 loops.
- 1                   6.     The method of claim 1, wherein:  
2                   the providing step is carried out with the cover extending around no more than  
3 half the circumference of the vessel.
- 1                   7.     The method of claim 1, wherein:  
2                   the providing step is carried out with the cover extending around no more than  
3 one third the circumference of the vessel.

- 1           8.     The method of claim 1, further comprising the steps of:  
2           coupling at least the lateral extension to a source of energy; and  
3           delivering the energy to the lateral extension after the introducing step.
- 1           9.     The method of claim 8, wherein:  
2           the coupling and delivering steps are carried out with the source of energy  
3   being RF energy.
- 1           10.    The method of claim 1, wherein:  
2           the providing step is carried out with the cover being wrapped around the  
3   expandable element.
- 1           11.    The method of claim 10, wherein:  
2           the providing step is carried out with the cover being wrapped around the  
3   expandable element without overlapping folds.
- 1           12.    A device for treating an aneurysm, comprising:  
2           a cover which covers the neck of the aneurysm to isolate the aneurysm  
3   from a parental vessel; and  
4           a lateral extension coupled to the cover, the lateral extension extending from  
5   the cover and into the aneurysm when the cover is positioned over the neck of the aneurysm.
- 1           13.    The device of claim 12, further comprising:  
2           the cover comprises a mesh; and  
3           the lateral extension comprises a loop.
- 1           14.    The method of claim 12, wherein:  
2           the cover is a substantially flat element which is positioned against a wall of  
3   the parental vessel around the neck of the aneurysm when the lateral extension is positioned  
4   in the aneurysm.
- 1           15.    The device of claim 12, wherein:  
2           the lateral extension forms 1-8 loops.
- 1           16.    The device of claim 12, wherein:

2 the providing step is carried out with the lateral extension forming only one  
3 loop.

1 17. The device of claim 12, wherein:  
2 the loop has a first side attached to the cover.

1 18. The device of claim 12, wherein:  
2 the loop is slidable relative to the cover when the loop expands.

1 19. The device of claim 12, wherein:  
2 the cover extends no more than about 180 degrees around a longitudinal axis  
3 of the device when expanded so that side branch vessels are not occluded by the cover.

1 20. The device of claim 12, wherein:  
2 the cover extends no more than about 120 degrees around the longitudinal axis  
3 when expanded so that side branch vessels are not occluded by the cover.

1 21. The device of claim 12, further comprising:  
2 a source of energy coupled to at least the lateral extension.

1 22. The device of claim 21, wherein:  
2 the source of energy is RF energy.

1 23. The device of claim 21, wherein:  
2 the cover does not conduct the energy when the lateral extension conducts  
3 energy from the source of energy.

1 24. The device of claim 12, wherein:  
2 the cover comprises a mesh.

1 25. The device of claim 12, further comprising:  
2 a delivery catheter having at least one lumen; and  
3 a first manipulator extending through the at least one lumen and releasably  
4 coupled to the lateral extension.

1 26. The device of claim 12, further comprising:  
2 a second manipulator releasably coupled to the cover.

1                   27.     A method of treating an aneurysm, comprising the steps of:  
2                   providing a cover which is positioned around an expandable element in a  
3 collapsed position, the cover being covered by a sheath;  
4                   advancing the cover to an aneurysm in a patient with the cover in the collapsed  
5 position;  
6                   withdrawing the sheath to expose the cover;  
7                   expanding the expandable member thereby expanding the cover, the cover  
8 expanding to an expanded condition, the cover being positioned over a neck of the aneurysm.

1                   28.     The method of claim 27, wherein:  
2                   the providing step is carried out with the cover being wrapped around the  
3 expandable element without creating folds when collapsed.

1                   29.     The method of claim 27, wherein:  
2                   the expanding step is carried out with the cover engaging a wall of the parental  
3 vessel around the neck of the aneurysm.

1                   30.     The method of claim 27, wherein:  
2                   the expanding step is carried out with the cover being attached to the wall.

1                   31.     The method of claim 30, wherein:  
2                   the providing step is carried out with an adhesive positioned on an outer  
3 surface of the cover and protected by the sheath during the advancing step.

1                   32.     The method of claim 27, wherein:  
2                   the expanding step is carried out with the cover extending no more than half  
3 the circumference of the vessel.

1                   33.     The method of claim 27, wherein:  
2                   the expanding step is carried out with the cover extending no more than one  
3 third the circumference of the vessel.

1                   34.     The method of claim 27, wherein:

2           the providing step is carried out with the cover having a metallic frame  
3   structure and an impermeable portion mounted to the frame, the impermeable portion being  
4   positioned to cover the neck of the aneurysm after the inflating step.

1           35.    The method of claims 27, wherein:  
2           the providing step is carried out with the sheath being folded over itself at a  
3   distal end; and  
4           the exposing step is carried out with the sheath being pulled back over itself.

1           36.    The method of claim 27, wherein:  
2           the providing step is carried out with the sheath comprising PTFE.

1           37.    The method of claim 27, wherein:  
2           the cover is mounted to a delivery catheter, the delivery catheter having a  
3   single lumen; and  
4           the advancing step is carried out with the device being advanced over a  
5   guidewire extending through the single lumen.

1           38.    A device for treating an aneurysm, comprising:  
2           a cover for covering a neck of an aneurysm  
3           a delivery catheter having an expandable element and a sheath, the cover being  
4   mounted around the expandable element, the sheath being retractable and overlying the cover  
5   thereby trapping the cover between the sheath and expandable element, the sheath being  
6   movable to a position in which the cover is exposed to permit expansion of the expandable  
7   element and the cover.

1           39.    The device of claim 38, wherein:  
2           the delivery catheter has a longitudinal axis; and  
3           the cover is wrapped around the balloon in the collapsed position without  
4   folds.

1           40.    The device of claim 38, further comprising:  
2           an adhesive on an outer surface of the cover.

1           41.    The method of claim 38, wherein:

2 the cover has a metallic frame and an impermeable portion mounted to the  
3 frame which covers the neck of the aneurysm.

1 42. The method of claims 38, wherein:  
2 the sheath is folded over itself at a distal end, the sheath being pulled back  
3 when exposing the cover.

1 43. The method of claim 38, wherein:  
2 the sheath comprises PTFE.

1 44. The method of claim 38, wherein:  
2 the delivery catheter has a single lumen which receives a guidewire:

1 45. A device for treating an aneurysm, comprising:  
2 a proximal hub;  
3 a distal hub; and  
4 a plurality of filaments extending between the proximal and distal hubs, the  
5 filaments biasing the proximal and distal hubs towards one another when moving from a  
6 collapsed position to an expanded position.

1 46. The device of claim 45, wherein:  
2 the plurality of filaments are 2-16 filaments.

1 47. The device of claim 45, wherein:  
2 the plurality of filaments form a generally concave surface which covers a  
3 neck of an aneurysm when positioned in the aneurysm.

1 48. The device of claim 45, wherein:  
2 the plurality of filaments form a generally convex surface opposite the concave  
3 surface.

1 49. The device of claim 45, further comprising:  
2 a catheter having a lumen; and  
3 a manipulator extending through the lumen and contacting the proximal hub.

1 50. The device of claim 45, further comprising:  
2 a source of power coupled to the manipulator.

1           51.    The device of claim 50, wherein:  
2           the source of power is an RF generator.

1           52.    A device for filling an aneurysm, comprising:  
2           a catheter having a lumen;  
3           a plurality of filaments each having a proximal end and a distal end, the  
4 plurality of filaments being coupled together at the proximal ends and each of the filaments  
5 extending to a free end at the distal end, the plurality of filaments being in a collapsed  
6 condition when positioned in the lumen of the catheter, the plurality of filaments expanding  
7 to occupy a space in an aneurysm when advanced out of the lumen in the catheter.

1           53.    The device of claim 52, wherein:  
2           the plurality of filaments are in a straightened configuration when collapsed  
3 within the catheter.

1           54.    The device of claim 52, wherein:  
2           each of the plurality of filaments forms a coil in the expanded position.

1           55.    The device of claim 54, wherein:  
2           the coils formed by the plurality of filaments each have a central axis with the  
3 central axes of the coils generally lying in a plane.

1           56.    The device of claim 54, wherein:  
2           the coils formed by the plurality of filaments each have a central axis with the  
3 central axis of the coils being angled relative to one another by about 90-120 degrees.

1           57.    The device of claim 52, wherein:  
2           the plurality of filaments are 2-4 filaments.

1           58.    A method of treating a cerebral aneurysm, comprising the steps of:  
2           providing an expandable structure movable from a collapsed shape to an  
3 expanded shape;  
4           introducing the expandable structure into a blood vessel of a patient;  
5           advancing the expandable structure through the patient's vasculature to a  
6 cerebral aneurysm while the expandable structure is in the collapsed position;

- 7 moving the expandable structure into the cerebral aneurysm;
- 8 expanding the expandable structure to the expanded position in the cerebral
- 9 aneurysm;
- 10 shrinking the wall of the aneurysm; and
- 11 leaving the expandable structure in the aneurysm after the shrinking step.